

LEARNING OBJECTIVES FOR NERVOUS SYSTEM

BIOL 260

Membrane Dynamics

- Describe the factors that determine rates of diffusion.
- Distinguish between passive and active transport mechanisms and illustrate cases when each is required.
- Compare the types of channel proteins.
- Explain how cells create and maintain electrochemical gradients and membrane potential.
- Describe mechanisms for changing cell membrane potential.

Neural Physiology

- Differentiate the ionic basis and characteristics of graded potentials and action potentials.
- Explain how neurons integrate graded potentials through temporal and spatial summation,
- Explain the significance of the absolute refractory period.
- Explain how neurons communicate stimulus intensity.
- Explain how action potentials are conducted along the axon.
- Describe the significance of myelination.
- Identify the events of synaptic transmission.
- Illustrate several mechanisms for pharmacological modification of synaptic transmission.
- Distinguish between the somatic and autonomic branches of the nervous system
- Distinguish between sympathetic and parasympathetic branches of the nervous system
- Describe the structure, neurotransmitters and receptors of the autonomic nervous system.
- Describe the mechanism of action of photoreceptors and cochlear hair cells
- Distinguish tonic and phasic sensory receptors.

Integration of Neuromuscular Function

- Identify the components and function of mono- and polysynaptic reflexes.
- Describe the local and CNS control of neuromuscular responses.
- Explain how feedback and feedforward control are involved in integrating body movements and balance.